

PATENT
Attorney Docket No. 401042/Lee

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

TADAO YAMAGUCHI

Application No. 09/770,383

Art Unit: 2834

Filed: January 29, 2001

Examiner: B. Mullins

For: NON-CIRCULAR,
FLAT MOTOR AND
MANUFACTURING
METHOD THEREOF

**AMENDMENTS TO SPECIFICATION, CLAIMS, AND ABSTRACT
MADE IN RESPONSE TO OFFICE ACTION DATED MARCH 27, 2002**

Amendments to existing claims:

1. (Twice Amended) A non-circular flat motor comprising:
~~a rotor rotating about an axis aligned in an axial direction;~~
a housing which is non-circular in a plane perpendicular to the axial direction, which rotatably supports the rotor, and which has side surfaces, at least a part of which are flat, and including a stator base; and
an armature coil at the stator base;
a magnet on the rotor facing the armature coil and spaced from the armature coil by a gap; and
a plurality of feeder terminals arranged at the side surface at corners of the housing and electrically insulated from adjacent portions of the motor.
3. (Twice Amended) The motor as claimed in claim-~~2~~1, wherein the housing is substantially rectangular in the plane and at least some of the feeder terminals do not protrude ~~outward~~ outwardly from the housing beyond sides of the housing.

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4. (Twice Amended) The motor as claimed in claim 1, further comprising:
a flat magnet;
a bracket as part of the housing and on which the magnet is disposed; and
~~a brush~~ a pair of brushes, at least one of the brushes being connected to the feeder
~~terminals across~~ through a first gap between the bracket and the magnet as insulation,
wherein the rotor receives electric power via the ~~brush~~ brushes and faces the flat magnet
across a second gap in the axial direction.

5. (Twice Amended) The motor as claimed in claim 4, wherein a base end of one of
~~the brush~~ brushes is part of the feeder terminal.

7. (Twice Amended) A non-circular flat motor comprising:
~~a rotor rotating about an axis aligned in an axial direction;~~
~~a housing including~~ a stator base having a shaft for supporting the rotor and centrally
located on the stator base, ~~the~~
a housing having a metal portion and a non-circular shape in a plane perpendicular to
the axial direction, and being at least partially a resin; and
at least two feeder terminals arranged at a corner of the housing on a side surface of
the housing, electrically insulating the feeder terminals from ~~adjacent portions~~ the metal
portion of the motor housing.

9. (Twice Amended) The motor as claimed in claim 8, further comprising:
a magnet;
a magnetic yoke plate, the shaft core integrally protruding from the center of the
magnetic yoke plate, constituting part of the housing;
~~a commutator;~~
a ~~resin~~ bracket including the resin coated, fixed shaft ~~wherein the rotor includes~~ and
incorporating at least part of the commutator magnetic yoke plate;
a rotor including a commutator and an armature coil having an end connected to the
commutator and rotatably supported by the resin coated, fixed shaft, facing the magnet and
spaced from the magnet by a gap;

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a pair of brushes having ~~free base ends and contacts~~ in sliding contact with the commutator and fixed such that at least two surfaces ~~can expose of the base ends of are~~ exposed to the resin bracket portion through;

a brush recess ~~portion~~ insulating at least one of the brushes from the magnetic yoke plate; and

an armature coil having one end connected to the commutator and rotatably arranged at the resin coated, fixed shaft, facing a magnet across a gap, wherein ~~the brush recess portion insulates at least one brush; and~~ the magnet is placed at a yoke portion of the resin bracket after the brushes are installed; and

a case accommodating the rotor and ~~installed at the resin bracket,~~ having a concave portion at the bracket and receiving the tip of the resin coated, fixed shaft ~~at the center of~~ centrally in the case, at least a magnetic path portion of the magnet being a magnetic body.

11. (Amended) The motor as claimed in claim 10, wherein the magnetic yoke plate is separated from the case except for a combined portion.

13. (Twice Amended) The motor as claimed in claim 9, wherein the resin of the resin coated, fixed shaft include a potassium titanate whisker and withstands a thermal deformation temperature of over 200°C (18.5 kgf/cm²) and is slippery.

14. (Twice Amended) ~~A non-circular flat brushless~~ The motor according to claim 1, comprising:

a metal plate incorporating a shaft support at a center, forming a first part of ~~a the~~ housing;

a fixed shaft supported by the shaft support, ~~a the~~ rotor being rotatably installed at a tip of the fixed shaft; and

~~a stator including~~ a plurality of armature coils arranged around the fixed shaft to drive the rotor; and, wherein a second part of the housing ~~supporting~~ supports the tip of the fixed shaft.

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16. (Twice Amended) The motor as claimed in claim 14, including a pinion incorporated in the rotor and accommodated in the housing.

19. (Twice Amended) The motor as claimed in claim ~~9~~ 4, wherein the rotor is eccentric to generate vibrations during rotation.